CLAIMS

1. An adaptive overload system for controlling the amount of traffic processed by a network access controller, the network access controller being arranged to receive traffic offered by a plurality of network access points arranged to provide said traffic with access to a communications network, the system comprising:

determining from the aggregate rate at which traffic is offered by all of said plurality of network access points to said network access controller if an overload condition exists at the network access controller, and if so, generating at least one constraint derived from said aggregate offered traffic rate;

communicating said at least one constraint to each of said plurality of network access points; and

processing at each one of said plurality of network access points received constraint information to determine one or more local constraints to be imposed on the traffic which limit the traffic offered by said one of said plurality of network access points.

2. An adaptive overload system for controlling the amount of traffic processed by a network access controller, the network access controller being arranged to receive traffic offered by a plurality of network access points arranged to provide said traffic with access to a communications network, the system comprising:

determining from reject rate at which the traffic offered by all of said plurality of network access points to said network access controller is rejected if an overload condition exists at the network access controller, and if so, deriving from the reject rate determined at least one constraint;

communicating said at least one constraint to each of said plurality of network access points; and

processing at each one of said plurality of network access points received constraint information to determine one or more local constraints to be imposed on the traffic which limit the traffic offered by said one of said plurality of network access points.

3. A system as claimed in claim 1 or 2, wherein each local constraint comprises a gap interval during which traffic received by the network access point is not offered to the access controller.

4. A system as claimed in claim 3, wherein the aggregate distribution of intervals imposed by all of said network access points under the control of the network access controller is randomised at the onset of the local constraint imposed by each said network access point.

5. A system as claimed in any preceding claim, wherein said randomisation is imposed individually by each network access point generating an initial interval whose duration is determined by a random process.

6. A system as claimed in any one of claims 1 to 4, wherein said randomisation is imposed individually by each network access point implementing said local constraint interval immediately following processing of the global constraint information received, and wherein the time for the global constraint information processing to be completed following the network access controller generating said global constraint information varies for each of said plurality of network access points.

7. An adaptive overload system arranged to externally control the amount of traffic processed by a network access controller, the network access controller being arranged to control a plurality of network access points, each network access point providing said traffic with access to the communications network, the system comprising:

determining at the network access controller if an overload condition exists, and if so, generating at least one global constraint to restrict the rate at which a network access point admits said traffic to the communications network;

communicating said at least one global traffic constraint to one or more of said plurality of network access points;

processing each global traffic constraint received to determine a plurality of local constraint conditions, wherein said receiving network access point performs the following steps to determine said local constraint conditions:

determining a local predetermined gap interval to be imposed on said traffic; and

determining an initial gap interval (Δt_0) which differs from the subsequent local predetermined gap intervals (Δt), wherein each initial gap interval (Δt_0) is determined independently by each of said plurality of network access points.

8. A system as claimed in claim 7, wherein in said step of communicating said at least one global traffic constraint to one or more of said plurality of network access points, at least one global traffic constraint is multicast to one or more of said plurality of network access points.

9. A system as claimed in either of claims 7 to 8, wherein the initial gap interval is determined at each network access point using a random or pseudo-random technique.

10. A system as claimed in any of claims 7 to 9, wherein the initial gap interval (Δt_0) duration ranges from 0 to the subsequent local gap interval Δt.

11. A system as claimed in any of claims 7 to 8, wherein said communications network is a VoIP network, and said traffic comprises call-related traffic.

12. A system as claimed in any of claims 7 to 11 wherein said network access controller is a Media Gateway Controller and each of said plurality of network access points comprises a Media Gateway.

13. A system as claimed in any of claims 7 to 12, wherein a global traffic rate constraint is determined by said access controller for an address.

14. A system as claimed in any of claims 7 to 13, wherein the number of lines along which a network access point receives traffic for transmission across the communications network and a scalable gap interval determined by the access controller based on the aggregate traffic offered to the access controller by all contributing network access points is used to determine a local predetermined gap interval.

15 A system as claimed in any of claims 8 to 14, wherein in said step of multicasting is to all of the network access points controlled by the access controller.

16. A system as claimed in any one of claims 7 to 15, wherein the controller determines said at least one global traffic constraint by analysing the rate at which off-hook messages are rejected by the access controller.

17. A system as claimed in any previous claim, wherein the controller analyses the rate at which traffic is offered to the controller to determine said at least one global traffic constraint.

18. A system as claimed any one of claims 7 to 17, wherein the controller analyses the rate at which traffic is rejected by the controller to determine said at least one global traffic constraint.

19. A system as claimed in any previous claim, wherein a dial-plan is implemented by a network access point to make it unnecessary to send an off-hook condition message to the access controller when a local gap constraint is being imposed.

20. A system as claimed in any previous claim, wherein the predetermined local gap interval is of the order of a minute.

21. A system as claimed in any previous claim, wherein each network access point determines the initial gap interval using a probabilistic method.

22. A system as claimed in any previous claim, wherein the initial gap interval, if not zero, is determined by each network access point such that all of the network access points' initial gap intervals are uniformly distributed in the range from zero to the local gap interval Δt determined by each network access point.

23. A method of controlling the number of calls received by a media gateway controller for admittance to a communications network, the media gateway controller being arranged to be connected to a plurality of media gateways, the method comprising the steps of:

determining at least one scalable call rate control parameter at the media gateway controller;

the media gateway controller multicasting the scalable rate control parameters to each media gateway within the domain of control of the media gateway controller;

scaling the call rate control parameter at each media gateway to determine a scaled call rate control parameter at the media gateway, wherein the scaled call rate control parameter comprises a call-gap interval to be imposed by the media gateway on calls destined for the media gateway controller; and

the media gateway imposing a predetermined initial call-gap interval.

24. A method as claimed in claim 23, wherein the initial gap interval is initially active for a finite sub-set of said plurality of media gateways.

25. A method as claimed in any one of claims 23 to 24, wherein the initial gap interval is determined using a random or pseudo-random technique.

26. A method as claimed in any one of claims 23 to 25, wherein at least one of said scalable call rate control parameters is assigned to a predetermined called address.

27. A method as claimed in any one of claims 23 to 26, wherein a dial-plan is imposed by the media gateway controller on the media gateway to determine the control treatment applied to at least part of a called address

28. A method as claimed in any one of claims 23 to 27, wherein the media gateway analyses at least a portion of the called address prior to sending any call related indication to the media gateway controller.

29. A method as claimed in any one of claims 23 to 28, wherein the media gateway does not send an off-hook signal to the media gateway controller until the media gateway has analysed at least one digit of the called address.

30. A method as claimed in any one of claims 23 to 29, wherein the media gateway controller sends a dial-plan to the media gateway in advance of the media gateway receiving a call from a user.

31. A method as claimed in any one of claims 23 to 30, wherein the media gateway controller indicates to the media gateway which dial-tone the media gateway should apply to the next call for a specific termination.

32. A method as claimed in any one of claims 23 to 31, wherein the call-gap is imposed by the media gateway after the media gateway has analysed the specific called address.

33. A network access controller having means arranged for use in the system as claimed in any one of claims 1 to 22, the controller being arranged to received traffic offered by a plurality of network access points arranged to provide said traffic with access to a communications network, the network access controller comprising:

means for monitoring the aggregate offered traffic rate comprising the traffic offered by all of said plurality of network access points to said network access controller;

processing means for determining from said aggregate traffic rate if an overload condition exists at the network access controller;

processing means arranged to generating at least one constraint derived from said monitored aggregate offered traffic rate; and

means arranged to communicate said at least one constraint to each of said plurality of network access points.

34. A network access point arranged for use in the system as claimed in any one of claims 1 to 23, the network access point being arranged to provide a network access controller with an offered traffic rate and further comprising:

means to received constraint information from the network access controller; and

means to process said received constraint information to determine one or more local constraints to be imposed on the traffic which limit the traffic offered by said network access point to the network access controller.

35. A network access controller as claimed in claim 33, wherein the controller comprises a media gateway controller.

36. A network access point as claimed in claim 35, comprising a media gateway.

37. A adaptive overload system arranged to externally controlling the amount of traffic processed by a network access controller substantially as described herein and with reference to the accompanying drawings.

38. A method of controlling the number of calls received by a media gateway controller for admittance to a communications network substantially as described herein and with reference to the accompanying drawings.